SIMTRUM

Portable Digital Microscope

2022 V1
For customized projects please Contact us:
info@simtrum.com

The HP Series Portable USB Digital Microscope is an easy-to-use, high-power scope. With continuous powers from 10x to 280x, it's ideal for viewing stamps, coins, bugs, plants, rocks, skin, gems, circuit boards, and more. With the higher power magnifications, you can even view traditional microscope slides under transmitted illumination.

Best of all, you can capture your discoveries using the built-in 2.0MP camera. Press the shutter to save images and high-resolution video directly to your PC. The LED illuminator ensures your specimens are clear and bright. An included metal stand allows for steady shots and comes in handy when viewing at higher powers, minimizing shaking and keeping your specimen in sharp focus.

For teens and adults alike, the HP Series portable USB microscope is a fun, educational tool. It's well suited for hobbyists, quality control inspectors, medical professionals, and scientific researchers.

Features
- USB-powered handheld digital microscope with continuous 10x to 280x magnification;
- Object distance-controlled zoom property;
- Single object distance, single magnification;
- Linear rotation magnification relationship;
- Object distance from 110 to 10 mm corresponding to 10x to 280x magnification;
- 5G high-grade optical glass with multi-layer anti-reflection coating;
- Built-in 2MP(1920x1080) digital camera for capturing images and videos;
- 8 LED ring illuminators with adjustable illumination;
- Use the included Windows software to capture images and videos of your discoveries. Measure your specimens with a built-in measurement tool;
- Computer requirements: CD/DVD drive and USB 2.0 port. UVC plug-and-play with Microsoft® Windows® XP / Vista / 7 / 8 /10 /11 (32 & 64 bit), OSx(Mac OS X) and Linux.

Specifications

Order Code	Sensor	Size(mm)	Sensitivity	FPS/Resolution	Binning	Exposure
HP02000KPA	2.0M/IMX290(C) 1/2.8"(5.56x3.13)	2.9 x2.9	1300mv with 1/30s 0.15mv with 1/30s	17@1920x1080	1x1	0.105ms~15s
HP02100KPA	2.1M/IMX307(C) 1/2.8"(5.56x3.13)	2.9 x2.9	1300mv with 1/30s 0.15mv with 1/30s	38@1920x1080 38@960x540	1x1 1x1	0.1-2000 ms
HP05100KPA	5.1M/IMX335(C) 1/2.8" (5.18x3.89)	2.0x2.0	505mv with 1/30s 0.13mv with 1/30s	26@2592x1944 26@1280x960 26@640x480	1x1 1x1 1x1	0.1-2000 ms

C: Color; M: Monochrome

Optical Specification for HP Series	
Optical Lens	5G High Grade Optical Glass with Multi-layer Anti-reflection Coating
Optical Magnification	0.1x~3.3x(33x)
Working Distance	10mm~110mm
Illumination	8 LEDs Illumination
Stand	M-SD-HM5 with F41mm Holding Ring
Other Specification for HP Series	
Spectral Range	380-650nm (with IR-cut Filter)
White Balance	Auto White Balance
Color Technique	Ultra-Fine Color Engine
Capture/Control SDK	Windows/Linux/macOS/Android Multiple Platform SDK(Native C/C++, C#/VB.NET, Python, Java, DirectShow, Twain, etc)
Recording System	Still Picture and Movie
Cooling System*	Natural
Operating Environment	
Operating Temperature (in Centidegree)	-10~ 50
Storage Temperature (in Centidegree)	-20~ 60
Operating Humidity	30~80%RH
Storage Humidity	10~60%RH
Power Supply	DC 5V over PC USB Port
Software Environment	
Operating System	Microsoft® Windows® XP / Vista / 7 / 8 /10 /11 (32 & 64 bit) OSx(Mac OS X) Linux
PC Requirements	CPU: Equal to Intel Core2 2.8GHz or Higher
	Memory: 2GB or More
	USB Port: USB3.0 High-speed Port
	Display: 17" or Larger
	CD-ROM

Specifications

Optical Specification for HP Series	
Optical Lens	5G High Grade Optical Glass with Multi-layer Anti-reflection Coating
Optical Magnification	0.1x~3.3x(33x)
Working Distance	10mm~110mm
Illumination	8 LEDs Illumination
Stand	M-SD-HM5 with F41mm Holding Ring

Magnification, Working Distance, and Field of View

Magnification	Work Distance	Field of View(X) mm	Field of View(Y) mm
10	134.63	48.09	27.07
20	73.65	24.05	13.54
30	50.85	16.03	9.02
40	40.39	12.02	6.77
50	33.51	9.62	5.41
60	29.30	8.02	4.51
70	26.02	6.87	3.87
80	23.76	6.01	3.38
90	21.84	5.34	3.01
100	20.32	4.81	2.71
110	19.18	4.37	2.46
120	18.14	4.01	2.26
130	17.33	3.70	2.08
140	16.58	3.44	1.93
150	15.97	3.21	1.80
160	15.40	3.01	1.69
170	14.90	2.83	1.59
180	14.49	2.67	1.50
190	14.09	2.53	1.42
200	13.75	2.40	1.35
210	13.43	2.29	1.29
220	13.15	2.19	1.23
230	12.88	2.09	1.18
240	12.65	2.00	1.13
250	12.42	1.92	1.08
260	12.21	1.85	1.04
270	12.03	1.78	1.00
280	11.85	1.72	0.97

Packing Information

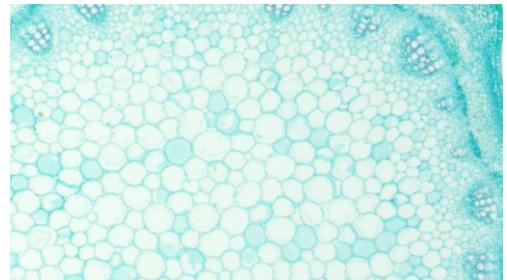| Standard Package	
A	Carton L:45cm W:45cm H:48cm (20pcs, 17Kg/ carton), not shown in the photo
B	Gift box: L:22cm W:22cm H: 9cm (0.8Kg/box)
C	HP series microscope
D	CD (Driver & utilities software, Ø12cm)

Sample Images Captured with HP02000KPA

Figure 1 Black Textile

Figure 4 Alfalfa Stem(CS)

Figure 2 Face Mask Fabric
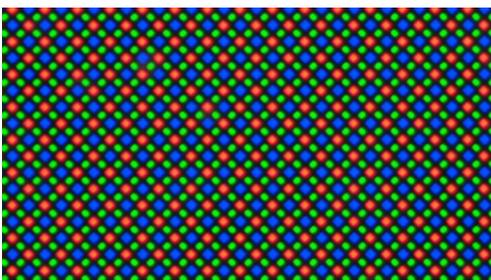

Figure 5 House Fly Wing
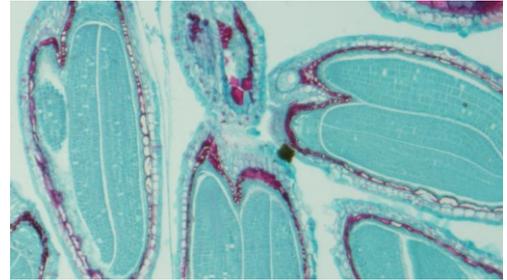

Figure 3 iPhone Pixels

Figure 6 Mature Embryo of Capsella

The CZ Series Continuous Zoom Portable Digital Microscope is an easy-to-use, high-power scope. It is a combination of Zoom Lens and a USB Camera you can choose their interested parts and SIMTRUM will install them into a CZ digital microscope.

With Transmission Illumination

With EPI Illumination On

Features

- The CZ stays in focus when magnification/focal length is changed;
- True continuous zoom that most of handheld USB microscopes do not have;
- Digital microscope with USB2.0 to computer or HDMI interface to HDMI display;
- Compact and professional optical performance;
- With compact inner 8 high power LEDs for the reflective illumination and uniform LED transmission illumination with battery as the power;
- Long and fixed working distance up to 70mm for all zoom positions;
- CNC mechanical body ensures smooth zooming operation;
- Wide range of resolutions from 1.2M~5M;
- Ultra-Fine color engine with perfect color reproduction capability;
- With advanced video & image processing application ToupView/ToupLite;
- Providing Windows/Linux/Mac OS multiple platforms SDK;
- Native C/C++, C#/VB.NET, DirectShow, Twain Control API;
- USB Power, no extra source required;

SIMTRUM

Specifications

Order Code	Zoom Lens	Camera Module
CZA05100KPA ZPA605100A	ZLA 0.25X~1.6X (continues and parfocal)	X05100KPA (5M pixels CMOS camera)
CZA01200KPA ZPA601200A	ZLA 0.25X~1.6X (continues and parfocal)	X01200KPA (1.2M pixels CMOS camera)
CZB05100KPA ZPB605100A	ZLB 0.7X~5.6X (continues and parfocal)	X05100KPA (5M pixels CMOS camera)
CZB01200KPA ZPB601200A	ZLB 0.7X~5.6X (continues and parfocal)	X01200KPA (1.2M pixels CMOS camera)

ZLA: A type zoom lens with 0.25X ~ 1.6X magnification
ZLB: B type zoom lens with 0.7X ~5.6X magnification

Zoom Lens for CZ Series Digital Microscope

Parameter	Model	
	ZLA	ZLB
Zoom Lens	0.25X~1.6X (continues and parfocal)	0.7X~5.6X(continues and parfocal)
Working Distance	67.85mm(From lens to object surface)	31.73(from lens to object surface)
MTF	Diffraction limited	Diffraction limited
Field	Φ28.8~4.5mm	Φ10.85~1.36mm
Reflection Illumination (USB power supply)	8 LEDs embedded illumination(adjustable)	8 LEDs embedded illumination(adjustable)
Transmission Illumination (Battery power, Optional)	Uniform illumination(3 levels switchable)	Uniform illumination(3 levels switchable)

Camera Modules for CZ Series Digital Microscope

Order Code	Sensor & Size (mm)	Pixel(µm)	G Responsivity Dynamic range SNRmax	FPS/Resolution	Binning	Exposure
X05100KPA	5.1M/MT9P001(C) 1/2.5" (5.7x4.28)	2.2x2.2	0.53 V/lux-sec 66.5dB 40.5dB	5@2592x1944 18@1280x960 60@640x480	1x1 2x2 4x4	0.294ms~2000ms
X01200KPA	1.2M/AR0130(M) 1/3"(4.8x3.6)	3.75 x3.75	6.5v/lux-sec 85.3dB 44dB	28@1280x960 30@640x480	1x1 2x2	0.4ms~2000ms

Specifications

Other Specification for CZ Series	
Spectral Range	380-650nm (with IR-cut Filter)
White Balance	Auto White Balance
Color Technique	Ultra-Fine Color Engine/NA for Monochrmatic Sensor
Capture/Control SDK	Windows/Linux/macOS/Android Multiple Platform SDK(Native C/C++, C#/VB.NET, Python, Java, DirectShow, Twain, etc)
Recording System	Still Picture and Movie
Cooling System*	Natural
Operating Environment	
Operating Temperature (in Centidegree)	-10~ 50
Storage Temperature (in Centidegree)	-20~ 60
Operating Humidity	30~80%RH
Storage Humidity	10~60%RH
Power Supply	DC 5V over PC USB Port
Software Environment	
Operating System	Microsoft® Windows® XP / Vista / 7 / 8 /10 /11 (32 & 64 bit) OSx(Mac OS X) Linux
PC Requirements	CPU: Equal to Intel Core2 2.8GHz or Higher
	Memory: 2GB or More
	USB Port: USB3.0 High-speed Port
	Display: 17" or Larger
	CD-ROM

Dimension

240mm

70mm

245mm

170mm

Packing Information

	Standard Package	
A	Carton L:51cm W:31.5cm H:18cm (1pcs, 2.8Kg/ carton, 0.029m3), not shown in the photo	
B	CZ series digital microscope	
C	Solid stand	
D	Hexwrench to install the stand	
E	CD (Driver & utilities software, Ø12cm)	
	Optional Accessory	
J	Uniform transmissive illumination kit(3 Battery power supply, 3 levels switchable)	
K	Calibration kit	106011/TS-M1 (X=0.01mm/100Div.); 106012/TS-M2(X,Y=0.01mm/100Div.); 106013/TS-M7(X=0.01mm/100Div., 0.10mm/100Div.)